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TYPES OF BRUNIACEAE IN THE THUNBERG HERBARIUM

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Abstract

Checking the identity of the types of the Bruniaceae in the Herb. Thunberg, many of which have been used as basionyms by subsequent authors, has shown that some names have been misapplied, particularly in the genus *Staavia;* one species of *Linconia* must be reduced to synonymy and one new subspecies of *Tittmannia laxa* must be recognised.

Staavia capitella (Thunberg) Sonder

Holotype: *Thunberg* 5735. "Brunia capitella."

This is the correct name for the species referred by Pillans (1947) to *Staavia comosa* (Thunberg) Colozza. *Brunia comosa* Thunberg is represented by two

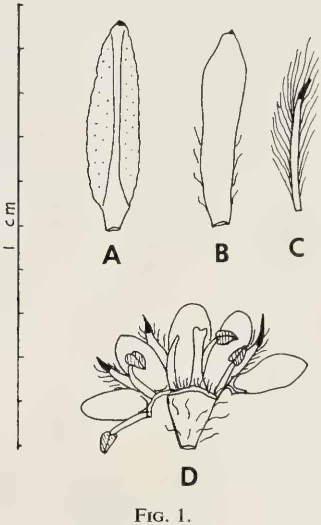

Fig. 1.
"Brunia capitella" *Thunberg* 5735.
A: abaxial side of leaf. B: involucral bract. C: bracteole. D: partly dissected flower.

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sheets in Herb. Thunberg (5736 & 5737) both of which are *Berzelia lanuginosa* (L.) Brogniart in fruit. Colozza (1905) erroneously applied his new combination to *Staavia capitella* and one must return to the correct application of *Staavia capitella* by Sonder (1862) in the Flora Capensis, of which *Brunia capitella* Thunberg is the basionym.

Thunberg 5735 (the holotype) matches most closely *Schlechter* 9842 from Genadendal, quoted under *Staavia trichotoma* by Pillans who misapplied this name to Staavias from the Rivier Zonde Einde range. He placed in *Staavia comosa* those plants from the Caledon area with smaller, often laterally placed inflorescences, narrower leaves and linear involucral bracts. In *Staavia trichotoma* he placed those plants from the Rivier Zonde Einde range with larger, usually terminal inflorescences, wider leaves and obtuse bracts. These forms can, however, be connected by intermediate forms from Wildepaardeberg (*Stokoe* 2740), Kaaiman's Gat (Esterhuysen 1886), Villiersdorp (*de Villiers* s.n., *Bolus* 5049, *Esterhuysen* 32063), while *Schlechter* 9842 from Genadendal is the closest match to Thunberg's type of *Brunia capitella. Staavia capitella* (Thunberg) Sonder therefore includes both *Staavia comosa* sensu Colozza and *Staavia trichotoma* sensu Pillans.

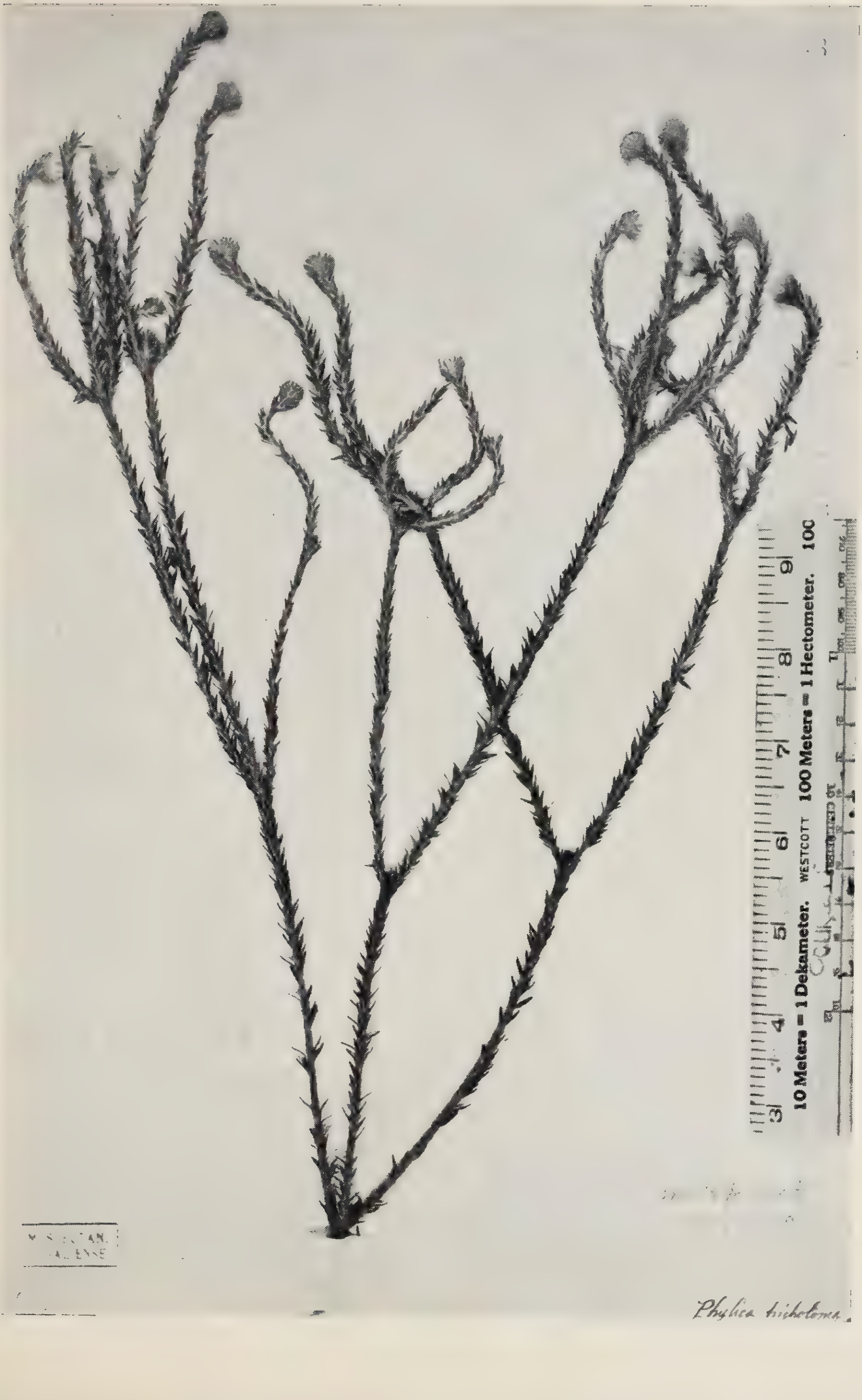
This variable species can usually be readily distinguished from Staavia radiata (L.) Dahl by its hairy disc and poorly differentiated involucre. In the Caledon–Bredasdorp area however, where these two species are sympatric, they approach rather more closely. Since *Staavia radiata* is known to hybridise with *Staavia dodii* Bolus (e.g. *Esterhuysen* 31684) it is likely that some hybridisation and introgression between the more closely related *Staavia radiata* and *Staavia capitella* has occurred. *Staavia radiata* from this area tends to be more hairy in all respects and *Staavia capitella* to have more slender leaves and more prominent involucral bracts. However *Staavia capitella* never has more than a single whorl of coloured bracts and its bracteoles are more robust than the very slender bracteoles of *Staavia radiata* which also has at least two whorls of differentiated bracts, the innermost being small and strikingly spathulate.

Staavia trichotoma (Thunberg) Pillans

Holotype: *Thunberg* 5543. "Phylica trichotoma."

This species of *Staavia* is only known from three collections. The Herb. Thunberg contains two, the holotype, collected by Masson, and *Thunberg* 5517 labelled "*Phylica globosa*". The third specimen is in the Sonder collection at Melbourne (MEL 27727) and is extensively annotated by Sonder, and because of the annotation "ex Thunberg" is probably a piece of *Thunberg* 5517.

Plate 1.
Holotype: *Thunberg* 5543. "Phylica trichotoma".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Phylica trichotoma

Thunberg's first description of this species is *Phylica trichotoma* in 1794. Later in the Dissertatio de Phylica (1804) he also described *Phylica globosa* while still maintaining *Phylica trichotoma* as a separate species. Sonder (1862) united these two as a single species which he transferred to the genus *Staavia*, incorrectly adopting the later epithet in *Staavia globosa* (Thunberg) Sonder. This was corrected by Pillans (1947) who made the new combination *Staavia trichotoma* (Thunberg) Pillans, but misapplied it to that form of *Staavia capitella* from the Rivier Zonde Einde range, as has been explained above.

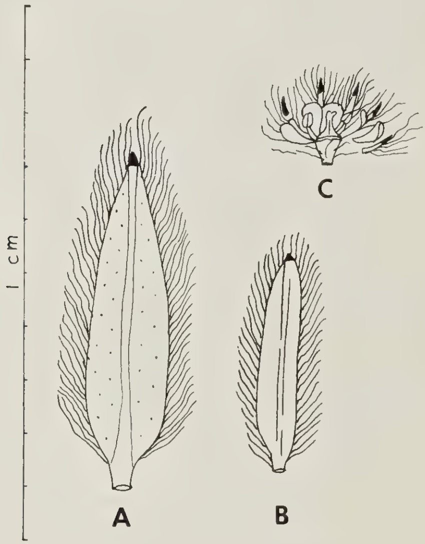

Fig. 2.
"Phylica trichotoma" *Thunberg* 5543.
A: abaxial side of leaf. B: inner side of involucral bract. C: immature flower partly dissected.

Staavia trichotoma differs from *Staavia capitella* in having leaves 7—10 mm long which are densely ciliate along the whole margin even in the second year of growth and in having a more globose inflorescence which is invariably terminal, up to 9 mm in diameter (still immature since none of the three specimens has fully developed flowers) with a leafy involucre 4—5 whorls in depth. The innermost bracts are narrowly lanceolate (4 mm long, 1 mm wide) and so densely clothed in hairs externally as to be invisible before dissection because they merge with the densely ciliate disc. The flowers on both the Thunberg and Sonder material are in bud, and therefore one cannot accept Sonder's distinguishing character of "sepals longer than petals" because this is usual in all *Staavia* buds. Sonder's material carries a note "Genadenthal" but Thunberg gives no locality. Since this "lost" species is most closely allied to *Staavia capitella* a search for it should be made on the Rivier Zonde Einde mountains or possibly the Langeberg, areas visited by Thunberg and Masson on their joint journey.

Staavia verticillata (L.f.) Pillans

Lectotype: Left-hand specimen on *Thunberg* 5750. "Brunia verticillata."

In his description of *Brunia verticillata* (1781) Linnaeus the younger placed the name Thunberg after the description, but Thunberg's own description was not published till 1794. The two descriptions tally closely and there is no doubt that the two authors were describing the same plant. Since there is no specimen of *Brunia verticillata* in the Linnaean Herbarium, nor among the Linnaean collection in the Riksmuseet Stockholm, Thunberg's specimen of *Brunia verticillata* must be the type. The sheet *Thunberg* 5750 however, has on it two

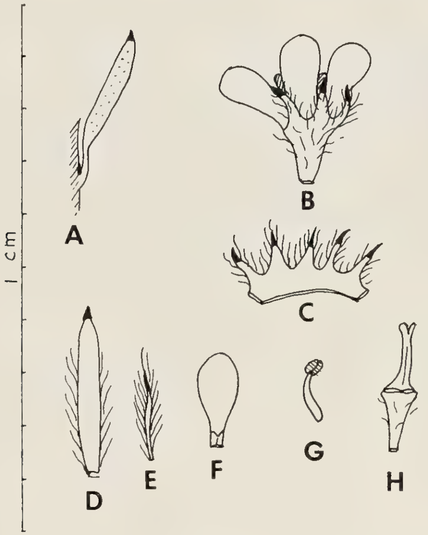

Fig. 3.

"Brunia verticillata" *Thunberg* 5750 left-hand specimen.
A: leaf attached to stem, showing stipule. B: flower. C: inner side of dissected calyx. D: involucral bract. E: bracteole. F: petal. G: stamen. H. ovary.

specimens, the right-hand one being *Staavia radiata* (L.) Dahl. This is a species that was recognised by Thunberg, in which he also included the species later referred to *Staavia dregeana* by Presl (1844). In the Herb. Thunberg there are two specimens labelled "*Staavia radiata*", namely Thunberg 5754 which is *Staavia radiata*, and Thunberg 5755 which is *Staavia dregeana*.

Linnaeus the younger was also presumably familiar with *Staavia radiata* which is represented in the Linnaean collections and there are three fairly clear indications in his description that he was referring to the new species and not redescribing *Staavia radiata*. The most obvious difference between *Staavia radiata* and *Staavia verticillata* is the prominent white involucre of the former. Therefore since there is no mention at all of an involucre in the younger Linnaeus' description there seems little doubt as to which of the two species was intended. There is also a leaf difference between the two species for, though *Staavia radiata* has a leaf which is strongly keeled below, it would hardly be described as "triquetris" and the leaves are definitely lanceolate not "obtusis", both descriptive terms which apply appropriately to *Staavia verticillata*. It therefore seems clear that, whatever Thunberg may have intended, Linnaeus the younger's description applies to the left-hand specimen on *Thunberg* 5750, and this must be taken as the lectotype. This sheet is unusual among the Thunberg collection in that a definite locality is indicated. It bears the inscription "summo Monte Rode Sand supra waterfall. Oct."

Berzelia squarrosa (Thunberg) Sonder

Holotype: *Thunberg* 5749. "Brunia squarrosa."

Brunia squarrosa, though misapplied by both Colozza (1905) and Pillans (1947) was correctly interpreted by Sonder (1862) in the Flora Capensis. *Berzelia arachnoidea* (Wendland) Ecklon & Zeyher based on *Brunia arachnoidea* Wendland (1810) has been incorrectly used to designate this species. *Brunia squarrosa* var. *reflexa* Sonder however, has been distinguished as a separate species, *Berzelia rubra* (Willdenow) Schlechtendal.

The Thunberg material has very immature inflorescences on which the flowers are still in an early stage of development, but the arachnoid-pilose young shoots combined with the long leaves (10—15 mm) make the specimen easy to identify and quite distinct from *Berzelia dregeana* Colozza, nor does it have the stout growth of *Berzelia rubra* (Willdenow) Schlechtendal.

Linconia cuspidata (Thunberg) Swartz

Holotype: *Thunberg* 5673. "Diosma cuspidata."

The holotype consists of two specimens both with long (7—13 mm) leaves which are narrowly linear and match shade forms of *Linconia cuspidata* such as *Esterhuysen* 31670 from Baviaanskloof, off Bains Kloof, and *Stokoe* 3550 from the Klein River Mountains, which is probably also a shade form. The flowers on the left-hand twig of Thunberg's material are larger (13 mm) and the bracts on the right-hand twig exceptionally narrow (2·5 mm long, 1 mm wide compared to 2 mm wide on the left-hand specimen). The closest match to the type is *Stokoe* 3550, but the flowers also show an anomalous enlargement of one sepal, similar to that in *Esterhuysen* 31670, which has not been noted except in material from Baviaanskloof, and this is probably the type locality. Thunberg's material is a collection of Masson's and there is a specimen of *Linconia* *cuspidata* labelled "ex Thunberg" in the Herb. Retzius at Lund which is probably a portion of the type.

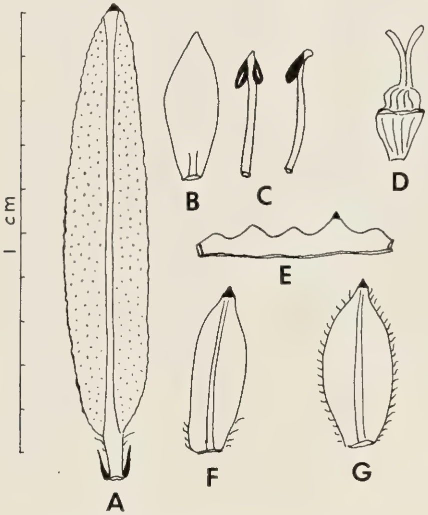

FIG. 4.
"Diosma cuspidata" *Thunberg* 5673.
A. leaf of left-hand specimen showing stipules. B: petal. C: stamen in face and side view. D: ovary. E: calyx. F: bract of left-hand specimen. G: bract of right-hand specimen.

Linconia cuspidata is a rare species occurring as small isolated populations or even isolated plants from Baviaanskloof south to the Rooi Els River and eastwards to the Klein River Mountains. There is sufficient material available in the Bolus Herbarium to indicate that there is a considerable range of leaf, bract and flower size. This variation appears to be ecological rather than geographical, as shown by *Stokoe* 4006 and *Esterhuysen* 2618 both from the Somerset Sneeukop–Landdrostkop area.

Two species of *Linconia*, in addition to *Linconia alopecuroidea* L., were accepted by Pillans (1947). *Linconia deusta* (Thunberg) Pillans was applied by him to *Zeyher* 2651 from the Rivier Zonde Einde range, and is conspecific with *Linconia thymifolia* Swartz. Swartz (1810) himself stated that *Linconia thymifolia* was the same as *Diosma deusta* Thunberg (1803) and this is confirmed by his excellent illustration. However, *Zeyher* 2651 does not match the type of *Diosma deusta*, *Thunberg* 5674, which is a fruiting specimen of *Linconia cuspidata* matching *Esterhuysen* 2618 from Somerset Sneeukop in leaf length and bract shape and size. This Esterhuysen collection was quoted under *Linconia cuspidata* by Pillans. The leaves of the Thunberg material are rather more lanceolate than usual in *Linconia cuspidata*, but certainly do not resemble those of *Zeyher* 2651. Nor can the latter be regarded as a separate species when the full range of variation is taken into account. The closest match to *Zeyher* 2651 is *Esterhuysen* 2619, also from the Landdrostkop area.

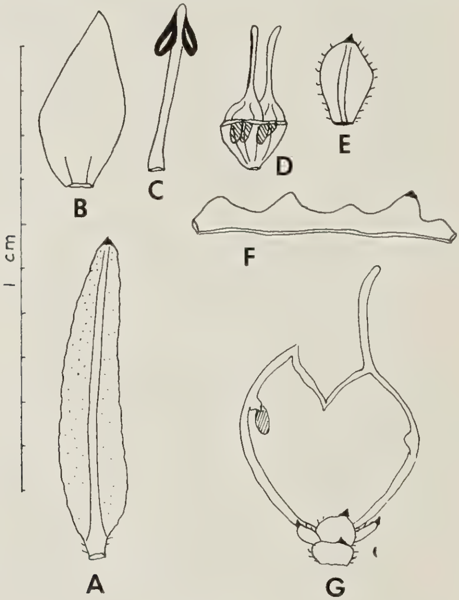

Fig. 5.
"Diosma deusta" *Thunberg* 5674.
A: abaxial side of leaf. B: petal. C: stamen. D: ovary. E: bract. F: calyx.
G: half dehisced fruit with one infertile seed.

Since Thunberg originally published both *Diosma cuspidata* and *Diosma deusta* simultaneously (1803), it is proposed that *Linconia cuspidata* (Thunberg) Swartz, the name already in current use for most of the material, should be retained for this species, reducing *Linconia deusta* (Thunberg) Pillans to synonymy.

Raspalia phylicoides (Thunberg) Arnott

Holotype: *Thunberg* 5747. "Brunia phylicoides".

Here confusion has arisen between two similar species of *Raspalia*, one of which is extremely variable. The more robust species has obtuse leaves 4—6 mm long, very hairy abaxially and glabrous adaxially and flowers about 4 mm long. This is the species to which Thunberg applied the name "*Brunia phylicoides*," and the nearest match to the type is *Bolus* 135 from Sir Lowry's Pass. The other more slender species varies considerably, depending on whether it is growing in thick bush or coppicing after fire (e.g. Powrie 174A & 174B) and, while the leaves are less hairy abaxially than the preceding species, they are usually densely hairy adaxially, but towards the eastern end of its distribution the leaves may be glabrous adaxially (e.g. *Ecklon & Zeyher* 1064 from Zwarteberg, Caledon). Even in the most robust forms of this second species the leaves do

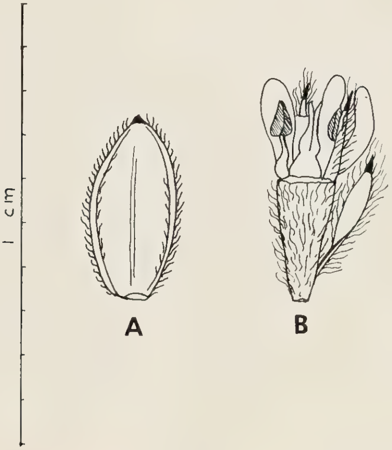

Fig. 6.
"Brunia phylicoides" *Thunberg* 5747.
A: adaxial surface of leaf. B: partly dissected flower.

not exceed 3 mm and are definitely lanceolate and the flowers are usually only 3 mm in size with more slender petals than the preceding species.

Sonder (1862) treated these two as varieties of a single species and misapplied the epithet *phylicoides* to the slender one, illegitimately creating a variety *robusta* Sonder based on the Thunberg type of *Brunia phylicoides*. This is clearly stated in the Flora Capensis and confirmed by two specimens annotated by Sonder in the Sonder collection at Melbourne. MEL 27719 is annotated "vera *Brunia phylicoides* Herb. Thunb." and "var robusta" and is probably a portion of the Thunberg type. MEL 27718 is a specimen of the slender species. In addition there is a sheet, unannotated by Sonder, MEL 27717 *Ecklon & Zeyher* 1064, the number quoted by Presl (1844) as *Raspalia passerinoides* (Schlechtendal) Presl, based on *Brunia passerinoides* Schlechtendal (1831). This is also the slender species.

Pillans (1947) recognised Sonder's two varieties as two species but misapplied the epithet *phylicoides* to the slender one, incorrectly concluding that *var robusta* Sonder was the more robust form assumed by this species when not coppicing.

The second species, which corresponds to *Brunia phylicoides* Thunberg, Pillans referred to *Raspalia globosa* based on *Phylica globosa* Lamarck (1797). If this is in fact a *Raspalia*, it is clearly the earliest epithet available but the illustration is so equivocal, showing no flowers at all and no indication of scale, that it might be either of the two species discussed and only examination of the type material can clarify the matter. In the interim the robust species should continue to be referred to as *Raspalia globosa* (Lamarck) Pillans, and the slender species as *Raspalia passerinoides* (Schlechtendal) Presl.

Tittmannia laxa (Thunberg) Presl

Holotype: *Thunberg* 5743. "Brunia laxa."

Tittmannia is a conserved genus, the type species given in the Nomina Generica Conservanda being *Tittmannia laterifolia* Brogniart (1826). This is apparently an orthographic error for *Tittmannia lateriflora* which is the only *Tittmannia* Brogniart described. Brogniart's excellent drawings show this to be undoubtedly conspecific with *Brunia laxa* Thunberg (1800). This state of affairs is similar to that in the conserved genus *Lonchostoma* where the type species is cited as *Lonchostoma obtusiflorum* Wikström nom. illeg. [Passerina pentandra Thunberg, L. pentandrum (Thunberg) Druce].

Pillans (1947) proposed a new large-flowered variety of *Tittmannia laxa*, var. *langebergensis* from Montague. He regarded the typical variety of *Tittmannia laxa* as being the small-flowered form which is fairly widespread through the Cedarberg, Witzenberg and Koubokkeveld to Matroosberg and Keeromsberg near Worcester, with outlying records from Piquetberg, Drakenstein Mountains and Jonkershoek. It is not common, existing as isolated populations on the various mountains and exhibiting a fairly wide range of variation particularly in the leaves which vary in size and shape and are sometimes even moderately hairy.

Pillans regarded this variable small-flowered form as conspecific with the two species described by Dümmer (1912) *Tittmannia oliveri* and *Tittmannia pruinosa*. These two are undoubtedly conspecific, *Tittmannia pruinosa* (*Bodkin* 1153 isotype BOL) being a fruiting specimen of *Tittmannia oliveri* (*Schlechter* 8874, isotype BOL) and were described simultaneously. Unfortunately Thunberg's type does not match this small-flowered form but matches the large-flowered form from Montague, so that var. *langebergensis* Pillans is a superfluous name.

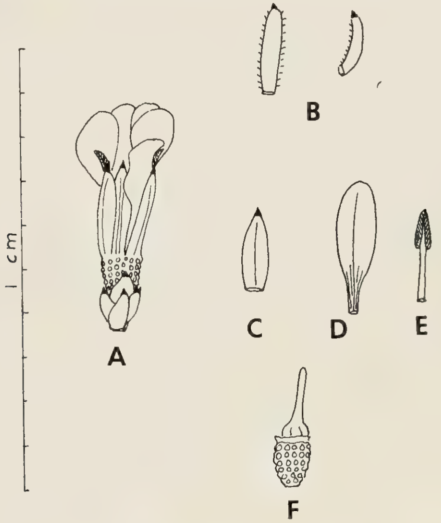

Fig. 7.
"Brunia laxa" *Thunberg* 5743.
A: flower. B: leaf, adaxial and side view. C: sepal. D: petal. E: stamen. F: ovary.

It would obviously be preferable to regard the local form from Montague as a geographical subspecies of the more widespread small-flowered form, but since this is not compatible with the International Code of Nomenclature, the small-flowered form must be treated as a subspecies and must be typified by one of the species already described. The name proposed is *Tittmannia laxa*

(Thunberg) Presl subsp. *oliveri* (Dümmer) Powrie, comb. nov. et stat. nov.: basionym *Tittmannia oliveri* Dümmer in Journal of Botany **50**: supp. 2: 16 (1912).

This subspecies differs from the typical subsp. *laxa* in having flowers less than 4 mm long, while subsp. laxa has flowers 5 mm long or more.

Lonchostoma pentandrum (Thunberg) Druce

Holotype: *Thunberg* 6339. "Lonchostoma obtusiflora" overwritten on "Passerina—" (the second word is illegible), also labelled "Gnidia pentandra".

Here Druce's combination (1916) antedates Pillans (1947), and though based on *Gnidia pentandra*, not the earlier *Passerina pentandra*, it must stand (Article 33, Note 2, International Code of Nomenclature 1966). There is a fragment in the Herb. Retzius labelled "Lonchostoma obtusiflora ex Thunberg" and "Passerina pentandra" deleted, which is probably a portion of the type.

Brunia laevis Thunberg

Holotype: *Thunberg* 5740. "Brunia laevis."

This is a small fragment but the leaves of this species alone are quite characteristic.

Brunia alopecuroides Thunberg

Holotype: *Thunberg* 5734. "Brunia alopecuroides."

This consists of a small portion of one of the upper branches with a few inflorescences and the modified leaves adjoining them. The small, laterally arranged inflorescences are suggestive of *Berzelia* but bear the characteristic two-styled flowers of *Brunia*. Sonder found only one style in this species but must have examined abnormal material for the type clearly has two.

Raspalia microphylla (Thunberg) Brogniart

Holotype: *Thunberg* 5744. "Brunia microphylla."

Brogniart wrongly interpreted the floral morphology in this species since, as in all *Raspalias*, the calyx readily strips off carrying part of the receptacle with it, thus leading him to describe the calyx as "free and inferior", an error pointed out by Arnott. Despite this there is no difficulty in relating Brogniart's excellent illustrations to Thunberg's type.

In conclusion I wish to thank the Director of the Herbarium of the Institute of Systematic Botany, University of Uppsala, for the loan of the Thunberg material; the Director of the National Herbarium of Victoria for the loan of Sonder's material; the Botanical Museum at the University of Lund for the loan of material from the Herb. Retzius and for copies of papers by Thunberg, Swartz, Dahl, Vahl and Wikström with translations from the Danish and

Swedish. I also wish to thank Professor Schelpe for permission to work in the Bolus Herbarium, for arranging the various loans and in preparation of this article. All material cited other than in the Thunberg and Sonder collections is in the Bolus Herbarium.

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